

Fig. 1

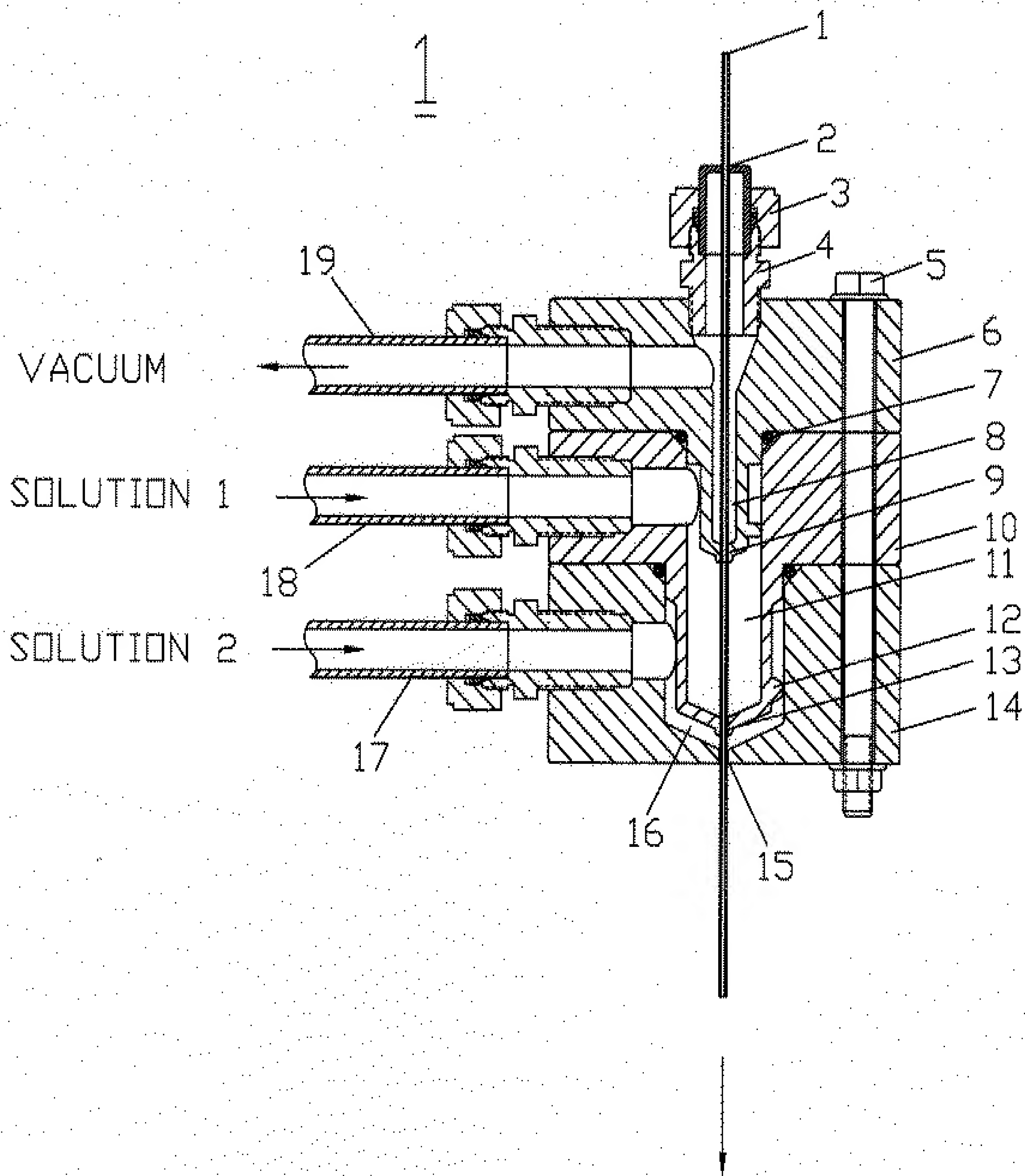


Fig. 2

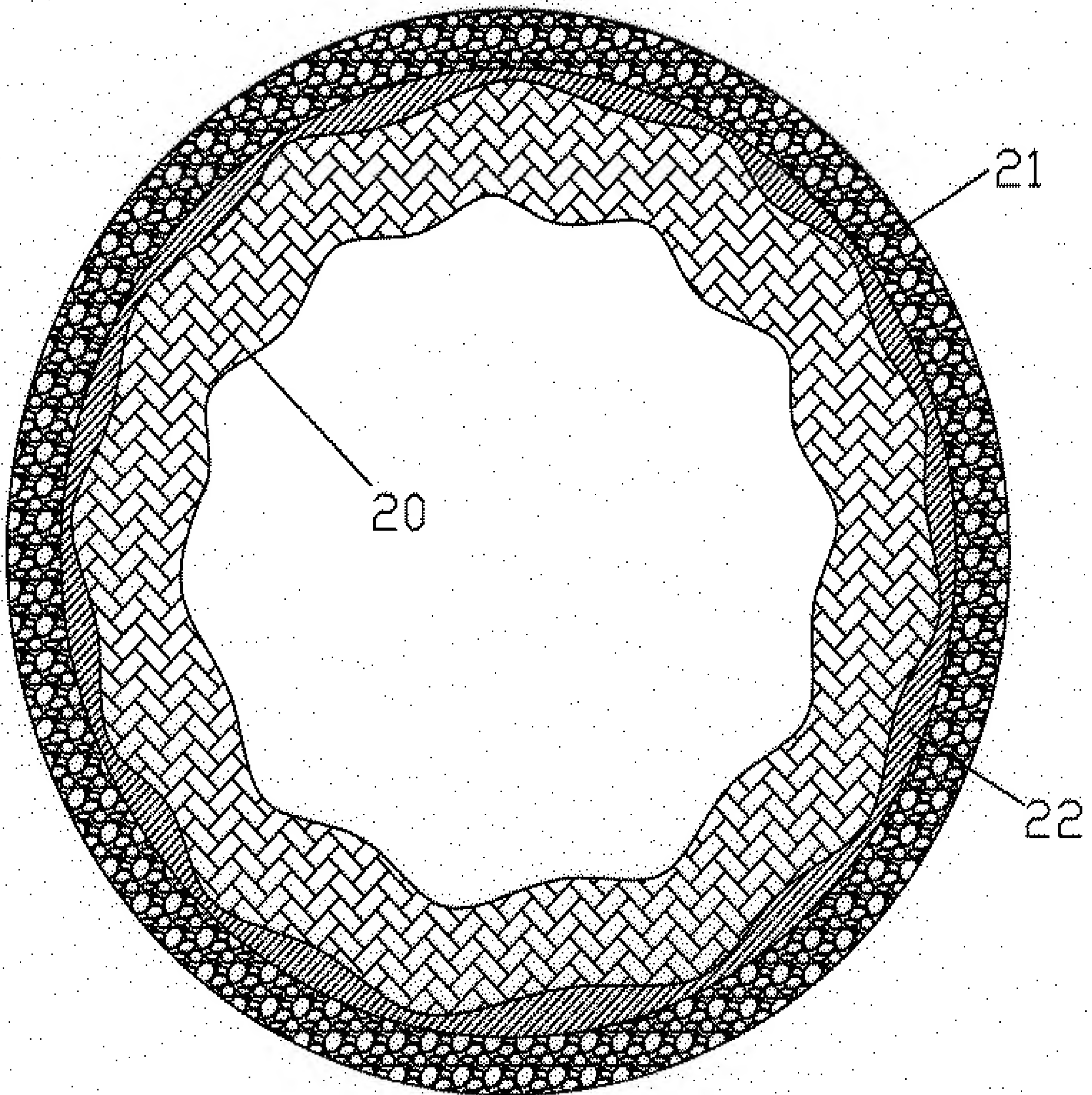


Fig. 3

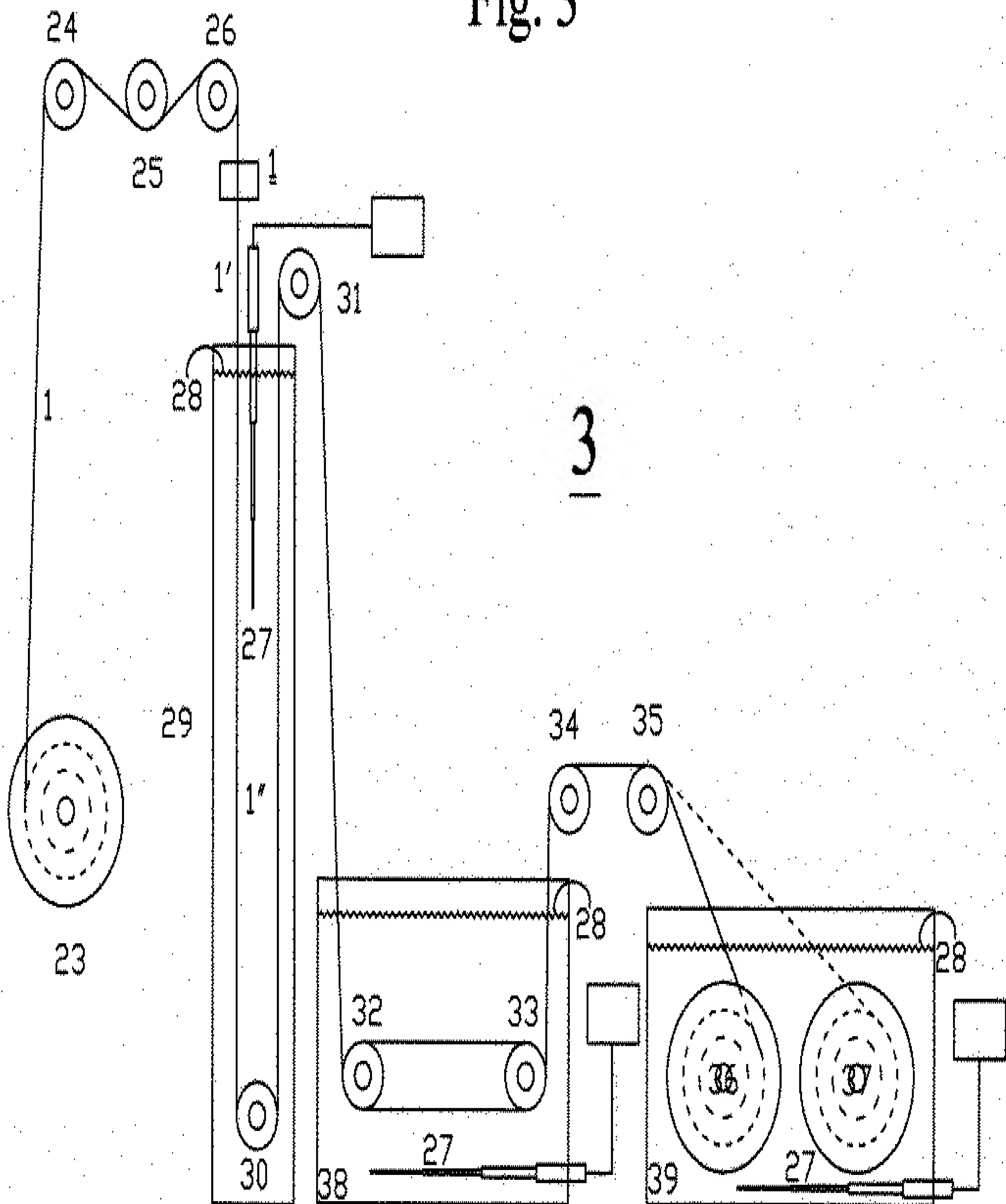


Table 1

COMPOSITION OF MEMBRANE CASTING SOLUTION (DOPE I)

Poly(vinylidene fluoride-co-hexafluoropropylene) (PVDF-HFP)	12%
Poly(acrylonitrile-co-methacrylonitrile), 70 micrometer particles	5%
Polyvinylpyrrolidone (PVP)	4%
Aluminum chloride hexahydrate ($\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$)	5%
Poly(vinyl butyral-co-vinyl alcohol-vinyl acetate)	2%
1-Methyl-2-pyrrolidinone (NMP)	72%

COATING CONDITION

Dope Pressure	90 psi
Vacuum suction	Yes
1 st coating	Dope I
2 ^{ed} coating	Dope I
Coagulation bath	Water, 50-55 °C
Primary leaching bath	Water, 50-55 °C
Secondary leaching bath	Water, ambient temperature
Coating speed	65 ft/min

MEMBRANE CHARACTERISTICS

Braid outside diameter	63±3 mil
Membrane outside diameter	78±3 mil
Burst pressure	>100 psi
Pure water permeability	142 gfd/psi
Orange juice permeability	1.8 gfd/psi, permeate clear, light yellow
Lemon juice permeability	1.2 gfd/psi, permeate clear
Soymilk permeability	1.0 gfd/psi, permeate clear, light yellow
Milk permeability	1.5 gfd/psi, permeate clear
200 k PEO rejection	74%

Table 2

COMPOSITION OF MEMBRANE CASTING SOLUTION (DOPE II)

Poly(vinylidene fluoride) (PVDF)	13%
Polyvinylpyrrolidone, cross linked	5%
Aluminum chloride hexahydrate ($\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$)	5%
Poly(vinyl butyral-co-vinyl alcohol-vinyl acetate)	2%
1-Methyl-2-pyrrolidinone (NMP)	75%

COATING CONDITION

Dope Pressure	100 psi
Vacuum suction	Yes
1 st coating	Dope II
2 ^{ed} coating	Dope II
Coagulation bath	Water, 50-55 °C
Primary leaching bath	Water, 50-55 °C
Secondary leaching bath	Water, ambient temperature
Coating speed	76 ft/min

MEMBRANE CHARACTERISTICS

Braid outside diameter	63±3 mil
Membrane outside diameter	78±3 mil
Burst pressure	>100 psi
Pure water permeability	35 gfd/psi

POST TREATMENT WITH 5,000 PPM NaOCl
AT AMBIENT TEMPERATURE FOR 5 DAYS

Pure water permeability	170 gfd/psi
Canobie Lake water permeability	62 gfd/psi, permeate clear and potable
Sewage water permeability	42 gfd/psi, permeate clear and dischargeable
Milk permeability	1.1 gfd/psi, permeate clear

Table 3

COMPOSITION OF MEMBRANE CASTING SOLUTION (DOPE III)

Poly(vinylidene fluoride) (PVDF)	12%
Poly(acrylonitrile-co-methacrylonitrile), 70 micrometer particles	3%
Polyvinylpyrrolidone, cross linked (PVP)	3%
Aluminum chloride hexahydrate ($\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$)	5%
Poly(vinyl butyral-co-vinyl alcohol-vinyl acetate)	2%
1-Methyl-2-pyrrolidinone (NMP)	75%

COATING CONDITION

Dope Pressure	120 psi
Vacuum suction	Yes
1 st coating	Dope III
2 ^{ed} coating	Dope III
Coagulation bath	Water, 50-55 °C
Primary leaching bath	Water, 50-55 °C
Secondary leaching bath	Water, ambient temperature
Coating speed	104 ft/min

MEMBRANE CHARACTERISTICS

Braid outside diameter	63±3 mil
Membrane outside diameter	78±3 mil
Burst pressure	>100 psi
Pure water permeability	227 gfd/psi
Canobie Lake water permeability	67 gfd/psi, permeate clear and potable
Sewage water permeability	38 gfd/psi, permeate clear and dischargeable
Soymilk permeability	3.0 gfd/psi, permeate clear, light yellow
Milk permeability	3.8 gfd/psi, permeate clear